Hardwood Lumber Market Directions

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Outline

- Overview of hardwood industry:
  - Ohio
  - Regional
  - National
- Impacts of housing, domestic markets
- Export trends
Main Locations for FDMC 300 Companies - 2016
Top 10 Wood Household Furniture states, 2018:

1. Ohio - 4,475 employees (14.2% of U.S. total)
2. North Carolina
3. California
4. New York
5. Virginia
6. Indiana
7. Illinois
8. Pennsylvania
9. Arizona
10. Texas

BLS: Hickory/Lenoir, NC = 1,398 emp.
BLS: Holmes/Wayne, OH = 1,314 emp.

(Holmes/Wayne higher when components are included)

Data source: Bureau of Labor Statistics
Wood household furniture employment, selected states

Source: Bureau of Labor Statistics
Top 10 Cabinet states, 2018:

1. Indiana – 10,936 employees (9.1% of U.S. total)
2. California
3. Texas
4. Pennsylvania
5. Alabama
6. Florida
7. Minnesota
8. Ohio – 4,474 employees (3.7% of U.S. total)
9. North Carolina
10. Washington

Data source: Bureau of Labor Statistics
Top 10 Millwork states, 2018:

1. California – 7,679 employees (7.5% of U.S. total)
2. Wisconsin
3. Iowa
4. Minnesota
5. Texas
6. Oregon
7. Virginia
8. Ohio – 3,869 employees (3.8% of U.S. total)
9. Georgia
10. Pennsylvania

Data source: Bureau of Labor Statistics
Top 10 Pallet states, 2018:

1. California – 5,872 employees (9.6% of U.S. total)
2. Texas
3. Ohio – 3,716 employees (6.1% of U.S. total)
4. Pennsylvania
5. North Carolina
6. Kentucky
7. Georgia
8. Indiana
9. Illinois
10. Missouri

Data source: Bureau of Labor Statistics
## U.S. Hardwood Lumber Production

*Apparent production = consumption + exports - imports*

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumption (bbf)</td>
<td>8.22</td>
<td>8.22</td>
<td>8.00</td>
<td>8.11</td>
<td>8.13</td>
</tr>
<tr>
<td>Imports</td>
<td>0.48</td>
<td>0.41</td>
<td>0.35</td>
<td>0.40</td>
<td>0.32</td>
</tr>
<tr>
<td>Exports</td>
<td>1.49</td>
<td>1.66</td>
<td>1.89</td>
<td>1.73</td>
<td>1.38</td>
</tr>
<tr>
<td>Apparent Production</td>
<td>9.23</td>
<td>9.47</td>
<td>9.54</td>
<td>9.44</td>
<td>9.18</td>
</tr>
</tbody>
</table>

Sources: W. Luppold; FAS; Census; BLS
U.S. Hardwood Lumber Production Estimates

Billion board feet

Annual inflation-adjusted hardwood lumber price index and average, 1990 to 2019

Index 1990=100

Data source: BLS
Where the hardwood lumber volume went, **1999**

- **Pallets, 30.0%**
- **Railway ties, 4.5%**
- **Furniture, 20.2%**
- **Millwork/flooring, 15.5%**
- **Cabinets, 10.0%**
- **Other, 10.8%**
- **Exports, 8.9%**

Where the hardwood lumber volume went, **2019**

- **Pallets, 33.8%**
- **Railway ties, 8.8%**
- **Furniture, 8.8%**
- **Millwork/flooring, 16.7%**
- **Cabinets, 8.2%**
- **Other, 12.1%**
- **Exports, 14.5%**

Source: Luppold and Bumgardner
Resource-weighted 1C and 2A lumber prices compared to pallet cants and crossties

Data sources: Hardwood Market Report; U.S. Census Bureau; FIA
Only 5 species had an increase in *sawtimber removals* between the latest FIA survey periods:
- Other red oaks, soft maple, and ash in the Lake States region
- Walnut and ash in the Central region

Lake States the only region without a decline in overall sawtimber removals
Resource-weighted Regional Prices for Mid-quality (1C) Hardwood Lumber

Data sources: Hardwood Market Report; U.S. Census Bureau
Annual average removals and mortality of eastern hardwood growing stock

Source: Luppold and Bumgardner
Housing update

Wood & Wood Products 2010
Housing market and woodworking employment

Data sources: US Census Bureau; Bureau of Labor Statistics
Value of private U.S. construction, 2002-2019

- Single family housing
- Multi-family housing
- Residential improvements
- Nonresidential construction

Data source: U.S. Census Bureau
Multi-family percentage of total housing market (single family + multi-family)

Data source: U.S. Census Bureau

Value per start in 2019:
- SF = $306,411
- MF = $152,207
Ten years of studies in collaboration with Virginia Tech, the U.S. Forest Service, and Woodworking Network/FDMC
Title: Year-over-year changes in sales volume

- **2009**: 81%
- **2010**: 50%
- **2011**: 38%
- **2012**: 31%
- **2013**: 25%
- **2014**: 21%
- **2015**: 20%
- **2016**: 20%
- **2017**: 19%
- **2018**: 21%

Legend:
- **Much worse (off by 20% or more)**
- **Somewhat worse (off by 10%)**
- **Slightly worse (off by 5%)**
- **Slightly better (up by 5%)**
- **Somewhat better (up by 10%)**
- **Much better (up by 20% or more)**
- **Unchanged**

Bar chart indicates the percentage of sales volume loss or gain for each year from 2008 to 2018, with categories for much worse, somewhat worse, slightly worse, slightly better, somewhat better, much better, and unchanged.
Proportion of production volume associated with the single family housing construction market for secondary manufacturers.
Over the next three years, about how much does your company plan to spend on investments to improve productivity or capabilities?
Within the next three years, in which areas will you invest significantly to improve productivity or capabilities?
Secondary Industry Trends

Photo: Urs Buehlmann
Major U.S. import sources:
Household & Institutional Furniture & Cabinets (NAICS 3371)

Data source: International Trade Administration
U.S. Wood Household Furniture Employment

Data source: Bureau of Labor Statistics
U.S. Cabinet and Millwork Employment

Number of employees

- Cabinets
- Millwork

Data source: Bureau of Labor Statistics
Number of firms: Millwork and Wood HH Furniture

Data source: Bureau of Labor Statistics
Cabinets and Wood HH Furniture: Average Firm Size

Employees per firm

- Cabinets
- Wood HH Furniture

Year: 2003-2018

Data points:
- 2003: Cabinets 13.2, Wood HH Furniture 22.7
- 2004: Cabinets 15.2
- 2005: Cabinets 22.7
- 2006: Cabinets 14.6, Wood HH Furniture 12.3
- 2007: Cabinets 12.3
- 2008: Cabinets 14.6, Wood HH Furniture 12.3
- 2009: Cabinets 14.6, Wood HH Furniture 12.3
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- 2016: Cabinets 14.6, Wood HH Furniture 12.3
- 2017: Cabinets 14.6, Wood HH Furniture 12.3
- 2018: Cabinets 14.6, Wood HH Furniture 12.3
Millwork: Average Firm Size

Employees per firm


Average Firm Size:
- 2003: 31.3
- 2004: 34.2
- 2005: 29.9

Note: The graph shows a significant drop in employees per firm from 2007 to 2009, followed by a recovery.
Hardwood Sawmills: Average Firm Size

Employees per firm

Recent *FDMC* Industry Surveys

- Over the last 3 years, have you increased use of computerization in:
  - Collaborating with customers
  - Design
  - Manufacturing processes
  - Accounting
  - Inventory tracking
  - Supply chain management

"A majority of firms increased computerization"
Does your company have a strategic vision of how digitization might affect your business in the mid- to long-term?

- Yes: 40.9%
- No: 33.6%
- Uncertain: 25.6%
Manufacturing applications where secondary companies increased the use of digitization over the last three years

- Designing products: 67.6%
- Machining: 65.5%
- Helping customers visualize product features: 57.6%
- Product engineering: 46.8%
- Optimization of raw material processing: 36.7%
- Inventory tracking: 26.6%
- Enable more customization of prod. attributes: 24.5%
- Increase data collection from mfg. processes: 24.5%
- Assembly: 21.6%
- Material handling: 20.1%
- Shipping and distribution: 15.8%
- Finishing: 14.4%
- To facilitate robotics: 6.5%
- We have not increased use: 13.0%
Perceived impact of increased digitization/computerization of manufacturing on firm employment

- 39.9% No change in the number of employees
- 27.5% Uncertain impact on employment
- 16.7% More employees
- 15.9% Fewer employees
Exports
U.S. Hardwood Exports - Volume

-20% ('18-'19)

-20% ('18-'19)

Data sources: USDA Foreign Agricultural Service
## Species Changes – Export Volume (2019)

### Lumber (-20% overall)

<table>
<thead>
<tr>
<th>Species</th>
<th>% change 2018-2019</th>
</tr>
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<tbody>
<tr>
<td>Red oak</td>
<td>-22</td>
</tr>
<tr>
<td>White oak</td>
<td>-17</td>
</tr>
<tr>
<td>Yellow-poplar</td>
<td>-32</td>
</tr>
<tr>
<td>Ash</td>
<td>-23</td>
</tr>
<tr>
<td>Other temperate</td>
<td>-5</td>
</tr>
<tr>
<td>Walnut</td>
<td>-6</td>
</tr>
<tr>
<td>Cherry</td>
<td>-18</td>
</tr>
<tr>
<td>Maple</td>
<td>-19</td>
</tr>
<tr>
<td>Hickory</td>
<td>+5</td>
</tr>
</tbody>
</table>

### Logs (-20% overall)

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<tr>
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<tr>
<td>Red oak</td>
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<tr>
<td>Ash</td>
<td>-11</td>
</tr>
<tr>
<td>Walnut</td>
<td>-20</td>
</tr>
<tr>
<td>White oak</td>
<td>-22</td>
</tr>
<tr>
<td>Birch</td>
<td>-8</td>
</tr>
<tr>
<td>Other temperate</td>
<td>+3</td>
</tr>
<tr>
<td>Yellow-poplar</td>
<td>-62</td>
</tr>
<tr>
<td>Cherry</td>
<td>-30</td>
</tr>
</tbody>
</table>

Data source: USDA Foreign Agricultural Service
Export destinations 2019: Top 3 markets for major hardwood lumber species

- China accounted for 70% of red oak and ash exports in 2018

Data: USDA Foreign Agricultural Service
U.S. hardwood lumber exports
(Top 4 destinations)

Million $

Canada
China
Mexico
Vietnam
Total to World

~ 72% of total

109 other trading partners account for the remaining 28%

Data: USDA Foreign Agricultural Service
Summary

- HW removals have declined in conjunction with markets
- Shifts in species/grades in demand
  - Lower grade markets up
  - Exports down
  - Fashion/non-wood competition effects in housing-related markets
- HW lumber production somewhat stable since 2016, but edged downward in 2019
- New products/markets, promotion, customization to improve demand
- Increasing digitization in the secondary industry – what does it mean for lumber providers?
Thank you.

Questions?